WHAT IS CLAIMED IS:

1. An oil spill detector for detecting oil spills from a fixed platform, comprising:

an oil spill sensor unit mountable to the fixed platform, the oil spill sensor comprising

a microwave radiometer (MWR) sensor, and

at least one additional remote oil sensor; and

a data analyzer coupled to receive input from the MWR sensor and the at least one additional remote oil sensor, the data analyzer being adapted to produce an output signal indicative of an oil spill in response to the input received from the MWR sensor and the at least one additional remote oil sensor.

2. A detector as recited in claim 1, wherein the data analyzer is mountable on the same fixed platform as the oil spill sensor unit.

3. A detector as recited in claim 1, wherein the data analyzer is mountable on a different fixed platform as the oil spill sensor unit.

4. A detector as recited in claim 1, further comprising an offshore fixed platform, the oil spill sensor unit being mounted to the offshore fixed platform.

5. A detector as recited in claim 1, further comprising an onshore fixed platform, the oil spill sensor unit being mounted to the onshore fixed platform.

6. A detector as recited in claim 1, wherein the oil spill sensor unit is mounted at a height in the range 10 m to 300 m above a level of a body of water

on which the oil spill takes place.

7. A detector as recited in claim 1, wherein the oil spill sensor unit is mounted at a height in the range 10 m to 100 m above a level of a body of water on which the oil spill takes place.

8. A detector as recited in claim 1, wherein the oil spill sensor unit is mounted at a height in the range 30 m - 300 m above a level of a body of water on which the oil spill takes place.

9. A detector as recited in claim 1, wherein the oil spill sensor unit is mounted at a height in the range 30 m - 100 m above a level of a body of water on which the oil spill takes place.

10. A detector as recited in claim 1, wherein the at least one additional sensor is a radar unit.

11. A detector as recited in claim 1, wherein at least a first portion of the MWR sensor is rotated about a vertical axis to sweep out an azimuthal detection area.

12. A detector as recited in claim 11, wherein at least a second portion of the MWR sensor is moves in a direction parallel to the vertical axis so as to change a range to a detection area.

13. A detector as recited in claim 12, wherein the second portion of the MWR sensor is moved through a vertical movement amount for each rotation of the first portion about the vertical axis.

13. A detector as recited in claim 12, wherein the second portion of the MWR sensor is a dish reflector.

14. A detector as recited in claim 12, wherein the first portion of the MWR sensor comprises the second portion of the MWR sensor.

15. A detector as recited in claim 1, wherein at least a portion of the MWR sensor is moved in a continuous manner during a detection cycle so as to reduce vibrations.

16. A detector as recited in claim 11, wherein the at least one additional remote oil sensor unit includes a radar unit having a radar antenna, the radar antenna being rotated around a radar axis parallel to the vertical axis.

17. A detector as recited in claim 16, wherein the radar axis is coincident with the vertical axis.

18. A detector as recited in claim 1, further comprising at least one of an IR/UV sensor and a lidar unit.

19. A detector as recited in claim 1, further comprising a controller coupled to receive data from the MWR sensor and the at least one additional remote oil sensor, the controller fusing data from the MWR sensor and the at least one additional remote sensor at the pixel level.

19. A detector as recited in claim 1, further comprising a controller coupled to receive data from the MWR sensor and the at least one additional remote oil sensor, the controller fusing data from the MWR sensor and the at least one additional remote sensor at the feature level.

20. A detector as recited in claim 1, further comprising a polymer window for the MWR sensor.

21. A detector as recited in claim 20, wherein the window is formed of polypropylene.

22. A detector as recited in claim 20, further comprising a window cleaning mechanism disposed proximate the window, the window cleaning mechanism being adapted to spray a pressurized gas at the window.

23. A method of determining the presence of an oil spill, comprising:

remotely monitoring a water surface at a first location for the presence of oil to produce first location monitoring data;

remotely monitoring a water surface at a second location for the presence of oil to produce second location monitoring data;

transmitting the first location monitoring data to a receiver at the second location; and

transmitting information related to the first and second location monitoring data to a control station.

24. A method as recited in claim 23, wherein remotely monitoring the water surface at the first location comprises monitoring the water surface with a microwave radiometer (MWR) unit and with at least one additional sensor.

25. A method as recited in claim 24, wherein the at least one additional sensor includes a radar unit.

26. A method as recited in claim 24, further comprising determining

whether oil is present on the water surface at the first location, using data from the MWR unit and the at least one additional sensor.

27. A method as recited in claim 26, wherein transmitting the first location monitoring data includes transmitting raw detection data from the MWR unit and the at least one additional sensor after determining that oil is present on the water at the first location.

28. A method as recited in claim 26, wherein transmitting the first location monitoring data includes transmitting sensor calibration data after determining that oil is not present on the water surface at the first location.

29. A method as recited in claim 24, further comprising fusing detection data from the MWR unit and from the at least one additional sensor and transmitting the fused sensor data from the first location to the second location.

30. A method as recited in claim 29, wherein fusing the detection data includes fusing the detection data at the pixel level.

31. A method as recited in claim 29, wherein fusing the detection data includes fusing the detection data at the feature level.

32. A method as recited in claim 23, wherein the first location is at a marginal oil field.

33. A method as recited in claim 23, wherein the second location is at a main oil platform.

34. A method as recited in claim 23, wherein remotely monitoring the

water surface at at least one of the first and second locations includes monitoring from a height in the range 10 m - 300 m above the water level.

35. A method as recited in claim 23, wherein remotely monitoring the water surface at at least one of the first and second locations includes monitoring from a height in the range 10 m - 100 m above the water level.

36. A method as recited in claim 23, wherein remotely monitoring the water surface at at least one of the first and second locations includes monitoring from a height in the range 30 m - 300 m above the water level.

37. A method as recited in claim 23, wherein remotely monitoring the water surface at at least one of the first and second locations includes monitoring from a height in the range 30 m - 100 m above the water level.

38. A method as recited in claim 23, wherein transmitting information related to the first and second location monitoring data to a control station comprises transmitting the information via satellite.

39. A method as recited in claim 23, further comprising aggregating the transmitted information related to the first and second location monitoring data with additional environmental information and presenting the aggregated information to a user.

40. A method as recited in claim 39, wherein the additional environmental information includes at least one of a map, weather information and simulation information.

41. A method as recited in claim 23, further comprising transmitting

information derived from the information related to the first and second location monitoring data from the control station to a user.

42. A method of detecting an oil spill at an offshore location, comprising:

receiving first detection data from a microwave radiometer (MWR) unit mounted on a fixed offshore platform;

receiving second detection data from at least an additional sensor mounted on the fixed offshore platform;

combining the first and second detection data to form fused detection data; and

determining whether oil is present on the water surface at the offshore location based on the fused detection data.

43. A method as recited in claim 42, wherein the at least one additional sensor is a radar unit.

44. A method as recited in claim 42, further comprising determining whether oil is present on the water surface at the offshore location based on the fused detection data at the fixed offshore platform.

45. A method as recited in claim 42, further comprising determining whether oil is present on the water surface at the offshore location based on the fused detection data at a site different from the fixed offshore platform.

46. A method as recited in claim 42, at least one of the MWR unit and the at least one additional sensor being mounted at a height in the range 10 m to 300 m above the water surface.

47. A method as recited in claim 42, at least one of the MWR unit and the at least one additional sensor being mounted at a height in the range 30 m to 300 m above the water surface.

48. A method as recited in claim 42, at least one of the MWR unit and the at least one additional sensor being mounted at a height in the range 10 m to 100 m above the water surface.

49. A method as recited in claim 42, at least one of the MWR unit and the at least one additional sensor being mounted at a height in the range 30 m to 100 m above the water surface.

50. A method as recited in claim 42, further comprising rotating at least a first portion of the MWR unit about a vertical axis to sweep out an azimuthal detection area.

51. A method as recited in claim 50, further comprising moving at least a second portion of the MWR unit in a direction parallel to the vertical axis so as to change a range to a detection area.

52. A method as recited in claim 51, wherein the second portion of the MWR sensor is moved through a vertical movement amount for each rotation of the first portion about the vertical axis.

53. A method as recited in claim 51, wherein the second portion of the MWR sensor is a dish reflector.

54. A method as recited in claim 51, wherein the first portion of the MWR unit comprises the second portion of the MWR unit.

55. A method as recited in claim 50, wherein the at least an additional sensor includes a radar unit having a radar antenna, and further comprising rotating the radar antenna around a radar axis parallel to the vertical axis.

56. A method as recited in claim 55, wherein the radar axis is coincident with the vertical axis.

57. A method as recited in claim 42, further comprising moving at least a portion of the MWR sensor in a continuous manner during a detection cycle so as to reduce vibrations.

58. A method as recited in claim 42, wherein the at least an additional sensor includes at least one of an IR/UV sensor and a lidar unit.

59. A method as recited in claim 42, wherein combining the first and second detection data includes fusing the detection data at the pixel level.

60. A method as recited in claim 42, wherein combining the first and second detection data includes fusing the detection data at the feature level.

61. A system for determining the presence of an oil spill, comprising:

a first monitor unit at a first, fixed offshore location for remotely monitoring a water surface at the first location, the first remote monitor unit producing first location monitoring data;

a second monitor unit at a second, fixed offshore location for remotely monitoring a water surface at the second location, the second monitor unit producing second location monitoring data;

a first transmitter at the first location coupled to receive the first

location monitoring data and to transmit the first location monitoring data to the second location;

a receiver at the second location to receive the first location monitoring data; and

a second transmitter at the second location coupled to transmit information derived from the first and second location monitoring data to a control station.

62. A system as recited in claim 61, wherein the first and second monitoring units each include at least a respective microwave radiometer (MWR) unit and an additional respective oil sensor.

63. A system as recited in claim 62, wherein the at least one additional sensor of at least one of the first and second monitoring units includes a radar unit.

64. A system as recited in claim 61, further comprising a controller at the second location, coupled to receive at least one of first location monitoring data and second location monitoring data, the controller being adapted to determine the presence of oil on the water surface at at least one of the first and second locations, based on the first and location monitoring data respectively.

65. A system as recited in claim 61, further comprising a controller at the first location to receive detection data from the first monitor unit.

66. A system as recited in claim 65, wherein the first transmitter transmits raw detection data from the first monitor unit as the first location monitoring data, after the controller at the first location determines that oil is present on the water at the first location.

67. A system as recited in claim 65, wherein the first transmitter is transmits sensor calibration data from the first monitor unit as the first location monitoring data after the controller at the first location determines that oil is not present on the water surface at the first location.

68. A system as recited in claim 65, wherein the controller at the first location fuses detection data from at least two sensors in the first monitor.

69. A system as recited in claim 68, wherein the controller at the first location fuses the detection data at the pixel level.

70. A system as recited in claim 68, wherein the controller at the first location fuses the detection data at the feature level.

71. A system as recited in claim 61, at least one of the first and second monitor units monitors the water surface at the first and second locations respectively from a height in a range from 10 m to 300 m above the water level.

72. A system as recited in claim 71, wherein the range is from 10 m to 100 m above the water level.

73. A system as recited in claim 71, wherein the range is from 30 m to 300 m above the water level.

74. A system as recited in claim 71, wherein the range is from 30 m to 100 m above the water level.

75. A system as recited in claim 61, wherein the second transmitter is a

satellite transmitter.

76. A system as recited in claim 61, further comprising an on-shore control station having a receiver to receive the information derived from the first and second location monitoring data from the second transmitter.

77. An oil spill detector for detecting oil spills from a ship-borne platform, comprising:

an oil spill sensor unit mountable to the ship-borne platform, the oil spill sensor unit comprising

a microwave radiometer (MWR) sensor,

at least one additional remote oil sensor; and

a data analyzer coupled to receive input from the MWR sensor and the at least one additional remote oil sensor, the data analyzer being adapted to produce an output signal indicative of an oil spill in response to the input received from the MWR sensor and the at least one additional remote oil sensor;

wherein the oil spill sensor unit compensates for motion of the ship so as to increase accuracy of the output signal.

78. A detector as recited in claim 77, wherein the at least one additional remote sensor is a radar unit.

79. A detector as recited in claim 77, wherein at least a first portion of the MWR sensor is rotated about a vertical axis to sweep out an azimuthal detection area.

80. A detector as recited in claim 79, wherein the data analyzer uses input from the MWR sensor and the at least one additional oil sensor

corresponding to a selected azimuthal range relative to the ship on which the oil spill sensor unit is mounted.

81. A detector as recited in claim 79, wherein at least a second portion of the MWR sensor is moves in a direction parallel to the vertical axis so as to change a range to a detection area.

82. A detector as recited in claim 81, wherein the second portion of the MWR sensor is moved through a vertical movement amount for each rotation of the first portion about the vertical axis.

83. A detector as recited in claim 81, wherein the second portion of the MWR sensor is a dish reflector.

84. A detector as recited in claim 81, wherein the first portion of the MWR sensor comprises the second portion of the MWR sensor.

85. A detector as recited in claim 77, wherein at least a portion of the MWR sensor is moved in a continuous manner during a detection cycle so as to reduce vibrations.

86. A detector as recited in claim 79, wherein the at least one additional remote oil sensor unit includes a radar unit having a radar antenna, the radar antenna being rotated around a radar axis parallel to the vertical axis.

87. A detector as recited in claim 86, wherein the radar axis is coincident with the vertical axis.

88. A detector as recited in claim 77, wherein the oil spill sensor unit is

mounted so as to maintain a constant angle relative to the horizon, irrespective of the ship's motion.

89. A detector as recited in claim 77, wherein the data analyzer deconvolves the motion of the ship from the input received from at least the MWR sensor.

90. A ship-borne method of detecting an oil spill, comprising

monitoring a surface of the water from the ship using a microwave radiometer (MWR) sensor,

monitoring the surface of the water from the ship using at least one additional remote oil sensor;

compensating for motion of the ship in at least one of taking and analyzing data from at least the MWR sensor; and

determining, in response to detection data from at least one of the MWR sensor and the at least one additional remote oil sensor whether oil is present on the water surface.

91. A method as recited in claim 90, wherein monitoring the surface of the water from the ship using at least one additional remote oil sensor includes monitoring the water using a radar unit.

92. A method as recited in claim 90, further comprising rotating at least a first portion of the MWR sensor about a vertical axis to sweep out an azimuthal detection area.

93. A method as recited in claim 92, further comprising moving at least a second portion of the MWR sensor in a direction parallel to the vertical axis so as to change a range to a detection area.

94. A method as recited in claim 93, further comprising moving the second portion of the MWR sensor through a vertical movement amount for each rotation of the first portion about the vertical axis.

95. A method as recited in claim 93, wherein the second portion of the MWR sensor is a dish reflector.

96. A method as recited in claim 93, wherein the first portion of the MWR sensor comprises the second portion of the MWR sensor.

97. A method as recited in claim 90, wherein at least a portion of the MWR sensor is moved in a continuous manner during a detection cycle so as to reduce vibrations.

98. A method as recited in claim 92, wherein the at least one additional remote oil sensor includes a radar unit having a radar antenna, and further comprising rotating the radar antenna around a radar axis parallel to the vertical axis.

99. A method as recited in claim 90, wherein the radar axis is coincident with the vertical axis.

100. A method as recited in claim 90, wherein compensating for the motion of the ship includes maintaining the oil spill sensor unit at a constant angle relative to the horizon, irrespective of the ship's motion.

101. A method as recited in claim 90, wherein compensating for the motion of the ship includes deconvolving the effect of the ship's motion from the

measured data to produce deconvolved detection data, and determining whether oil is present on the water surface includes analyzing the deconvolved detection data.